

Name _____

Date _____

Brain Dissections Spring 2010

Group members:

Goals

Compare and contrast the brains of a fetal pig, sheep and human.
Identify structures of the brain and nervous system within each specimen.
Create a PowerPoint to document your observations.

Materials

- Dissecting tray
- Dissecting kit with at least 1 scalpel and probe
- Gloves
- Dissection Guide
- Camera
- Plastic bags
- Lemons or scented item (to help mask the smell)

Powerpoint expectations

DUE Friday April 2nd

The PowerPoint should include the following slides for each specimen.

- Dorsal view of a of the brain
- Left and right hemispheres
- Ventral view of the brain
- Frontal, temporal lobes, brainstem, cerebellum
- Lateral view of cerebral hemisphere
- Medial view of cerebral hemisphere

THE BRAIN'S DIVISIONS

- Cortical terminology
 - Cortex (surface of cerebrum)
 - Gyrus (convolution)
 - Sulcus (fissure between convolutions)
- The five cortical lobes (frontal, central sulcus, parietal, occipital, temporal, lateral sulcus, and olfactory bulb)
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THE BRAIN'S PROTECTIVE COVERINGS

- the Dura Mater Outermost covering (optional)

Grey matter and white matter

- Grey matter (Areas where nerve cell bodies are concentrated)
- White matter (Areas where nerve cell fibers, insulated with the protein called

myelin, are concentrated, myelin allows faster information flow.)
The brain's blood supply (optional)

- The carotid and vertebral arteries
- Bridging Cerebral Veins

BRAIN REGIONS

- Hippocampus (Memory formation)
- Amygdala (Recognition and evaluation, fear conditioning and learning)
- Cerebellum (The coordination of movement and thought, balance and skill formation)
- Thalamus (The gateway to the cerebral cortex, The brain's central relay station)
- Hypothalamus (Homeostasis, Hormonal regulation, Autonomic control, Instinctual drives)
- Brainstem region (the supra-optic nucleus of the hypothalamus, serves as a motor and sensory fiber conduit, creates and delivers neurotransmitters, location of cranial nerves and their nuclei, contains parts of the cerebellar system, the nervous system's central integration and reflex center.)
- Corpus Callosum (facilitates communication between the two hemispheres)
- Pons (Within the white matter; conducting signals from the cerebrum down to the cerebellum and medulla)
- Spinal cord (Transmission of neural signals between brain and the rest of body)
- Medulla Oblongata (Functions for Basic Life Support)
- Olfactory Bulb (

Assessment: See attached rubric

DAY 1: Fetal Pig

Follow the directions for extracting the brain from the fetal pig. Using your class notes and the diagrams located within the sheep brain packet, identify as many of the structures as possible. Photo-document these structures.

The Brain

This dissection is difficult, tedious work and requires proceeding carefully to avoid destroying important brain tissues.

Position the animal so that the dorsal side is up.

Remove the skin from the entire skull.

The central nervous system consists of the brain and spinal cord. In order to observe the brain, the skull bone, or cranium needs to be removed. Insert the point of your scissors just under the bone at the base of the skull.

Angle the tip of the scissors upward so as not to damage the soft brain tissue. Cut forward along the midline of the brain to the eyes.

Cut to either side at the point where you began cutting and the point where you stopped cutting.

Gently remove the cranium by carefully using forceps to break and peel away the pieces.

The meninges are the membranes which cover the brain. Mammals have three layers of membranes. The dura mater is the outermost, the pia mater is the inner membrane, and the arachnoid mater lies in between.

The small olfactory lobes are located at the anterior end of the brain. These lobes receive nervous stimuli from the nose and are concerned with the sense of smell.

Behind the olfactory lobes is the cerebrum. The cerebrum is divided into two cerebral hemispheres by a deep groove named the longitudinal cerebral fissure. The cerebrum of most mammals has a folded surface. The cerebrum controls voluntary muscle movements, thinking, memory, judgement, and the senses.

Behind the cerebrum is the cerebellum. The cerebellum is principally a motor coordinating center.

Behind the cerebellum is the medulla oblongata which leads to the spinal cord. The medulla oblongata controls respiration, heart rate, and blood pressure. It also helps in regulating sensory impulses, hormonal secretions, and general awareness (consciousness).

DAY 3: Harvard Brain Bank

As we are led through human brain dissections, take photographs and record on a piece of paper the order and label for each picture. We will incorporate these into the PowerPoint to compare the features.